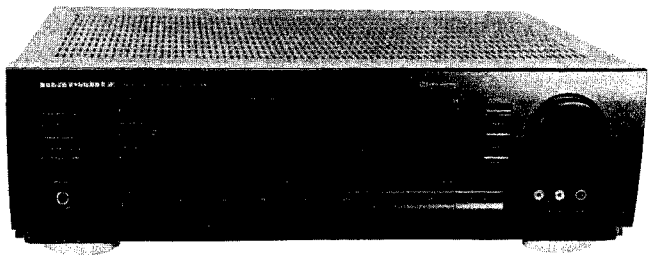
Service Manual

74 SR66/02B
SR-66U

A/V Surround Receiver



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Please use this service manual with referring to the user guide (D.F.U) without fail.

marantz®

model SR-66

Printed in Japan

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MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, **MARANTZ** company has created the ultimate in stereo sound. Only original **MARANTZ** parts can insure that your **MARANTZ** product will continue to perform to the specifications for which it is famous.

Parts for your **MARANTZ** equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:

Parts can be ordered either by mail or by Fax.. In both cases, the correct part number has to be specified.

The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or Fax. must be signed, otherwise such part order will be considered as null and void.

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FAX : 708-307-2687

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営業本部〒150 東京都渋谷区恵比寿南1丁目11番9号

SHOCK, FIRE HAZARD SERVICE TEST:

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard NO.1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

951108KI

1. TECHNICAL SPECIFICATIONS

□FRONT AMP SECTION (Condition: DOLBY PRO-LOGIC OFF)		Unit	Norminal	Limit
· RMS Output Power:				
Both channels driven at 40 Hz, 0.3 % THD, 8 Ω load		W	≥ 82	≥ 80
Both channels driven at 1 kHz, 0.3 % THD, 8 Ω load		W	≥ 82	≥ 80
· Inter-modulation Distortion(60 Hz : 7 kHz = 4 : 1 SMPTE)				
at 80 W output, 8 Ω load		%	0.05	0.08
· Total Harmonic Distortion				
at 20 Hz - 20 kHz, 80 W output, 8 Ω load	40 Hz	%	0.15	0.3
	1 kHz	%	0.1	0.2
	20 kHz	%	0.15	0.3
· Frequency Response				
at CD, 1 W output, 8 Ω load	20 Hz - 40 kHz	dB	±3	±3
· Input Sensitivity for 80 W output, 8 Ω load	CD/AUX	mV	200±20	200±30
· Tone Control	Bass at 100 Hz	dB	±10	±12
	Treble at 10 kHz	dB	±10	±12
· Channel Seperation with input shorted				
at CD/TAPE	1 kHz	dB	45	35
	10 kHZ	dB	40	30
· Signal to Noise Ratio with input shorted,				
IHF "A" weighted	CD/AUX/TAPE	dB	≥ 90	≥ 87

□CENTER AMP SECTION				
(Condition: VCR1 input, 230 mV input level at 1 kHz, center level with master vol. max. adj., WIDE mode)				
· RMS Output Power at 1 kHz, 0.3 % THD, 8 Ω load		W	≥ 52	≥ 50
· Signal to Noise Ratio with input shorted,				
IHF "A" weighted(PRO-LOGIC, 3-STEREO)		dB	≥ 70	≥ 65
· Frequency Response				
at 1 W output, -3 dB, 8 Ω load(PRO-LOGIC)	Normal	Hz	100 - 17000	150 - 15000
	Wide	Hz	30 - 17000	50 - 15000

□REAR AMP SECTION				
(Condition: VCR1 input, 230 mV input level at 1 kHz, rear level with master vol. max. adj.)				
· RMS Output Power at 1 kHz, 0.9 % THD, 16 Ω load		W	≥ 27	≥ 25
· Signal to Noise Ratio with input shorted,				
IHF "A" weighted, 20 ms delay time(PRO-LOGIC)		dB	≥ 65	≥ 60
· Frequency Response				
at 1 W output, -3 dB, 16 Ω load(PRO-LOGIC)		Hz	80 - 7000	100 - 6000

□FM SECTION				
(Condition: 65 dBf antenna input, 1 kHz MOD., 75 kHz DEV.)				
· Tuning Frequency Range				
100 kHz step	U	MHz	87.5 - 108	
50 kHz step	/02B	MHz	87.5 - 108	
· Usable Sensitivity				
at impedance 75 Ω, 3 % THD	U	dBf	≤ 16.2	≤ 20.2
at impedance 75 Ω, 26 dB S/N	/02B	dBf	≤ 16.2	≤ 20.2
· Image Rejection Ratio				
at 106.1 MHz	U	dB	≥ 40	≥ 35
at 106 MHz	/02B	dB	≥ 80	≥ 70
· IF Rejection Ratio				
at 90.1 MHz	U	dB	≥ 75	≥ 70
at 90 MHz	/02B	dB	≥ 75	≥ 70

		Unit	Norminal	Limit
· Full Limiting at -3 dB		μV	1.5	2
· 50 dB Quieting Sensitivity with IHF band pass filter				
at 98.1 MHz, U	MONO	dBf	≤ 20.2	≤ 24.2
	STEREO	dBf	≤ 42.2	≤ 45.2
at 98 MHz, /02B	MONO	dBf	≤ 20.2	≤ 24.2
	STEREO	dBf	≤ 42.2	≤ 45.2
· Signal to Noise Ratio with IHF band pass filter				
at 1 mV input	MONO	dB	≥ 70	≥ 68
	STEREO	dB	≥ 65	≥ 60
· De-emphasis at 40 - 12000 Hz				
75 μs	U	dB	±1.0	±1.5
50 μs	/02B	dB	±1.0	±1.5
· Auto Stop Level				
at 98.1 MHz	U	dBf	28	28±6
at 98 MHz	/02B	dBf	28	28±6
· Output Voltage				
at 75 kHz DEV., 1 kHz MOD., 1 mV input, MONO		V	0.6	0.6±0.1
· Multing Threshold				
at 98.1 MHz	U	dBf	28	28±6
at 98 MHz	/02B	dBf	28	28±6
· Supurious Response with 1/2 IF				
at 98.1 MHz	U	dB	70	60
at 98 MHz	/02B	dB	70	60
· Capture Ratio at 1 mV input		dB	2.5	3
· Alternative Channel Selectivity at 45 dBf				
±400 kHz	U	dB	≥ 50	≥ 40
±300 kHz	/02B	dB	≥ 65	≥ 60
· Total Harmonic Distortion at 1 mV input, 1 kHz				
U	MONO	%	≤ 0.3	≤ 0.5
	STEREO	%	≤ 0.5	≤ 0.7
/02B	MONO	%	≤ 0.5	≤ 0.7
	STEREO	%	≤ 0.8	≤ 1.0

□MPX SECTION

· Stereo Seperation				
at 100 % MOD., 1mV input, IHF band pass filter	1 kHz	dB	≥ 32	≥ 28
	10 kHz	dB	≥ 24	≥ 20
· Automatic stereo threshold				
at 98.1 MHz	U	dBf	28	28±6
at 98 MHz	/02B	dBf	28	28±6

□AM SECTION

(Condition: 80 dB/m(10 mV/m) antenna input, 400 Hz, 30 % MOD.)

· Tuning Frequency Range				
10 kHz step	U	kHz		520 - 1710
9 kHz step	/02B	kHz		522 - 1611
· Usable sensitivity at 400 Hz, 30 % MOD., -20 dB S/N				
600, 1000, 1400 kHz	U	dB/m	≤ 58	≤ 60
603, 999, 1404 kHz	/02B	dB/m	≤ 58	≤ 60
· Image Rejection Ratio at 1400 kHz(1404 kHz for /02B)		dB	35	28
· IF Rejection Ratio at 600 kHz(603 kHz for /02B)		dB	35	30
· AGC figure of merit from 100 mV/m at 1000 kHz(999 kHz for /02B)		dB	45	45
· Total Harmonic Distortion at 400 kHz, 30 % MOD., 10 mV/m input		%	≤ 1	≤ 2

	Unit	Norminal	Limit
· Output Voltage at 400 Hz, 30 % MOD., 10 mV/m input	mV	200	200 ± 50
· Audio Response at 10 mV/m input, 1 kHz / 0 dB, 1000 kHz(999 kHz for EUR/AUS) / -6 dB	Hz	80 - 2300	100 - 2000
· Selectivity at 350 μV/m, ± 9 kHz(± 10 kHz for EUR/AUS)	dB	≥ 25	≥ 20
· Signal to Noise Ratio at 1000 kHz(999 kHz for EUR/AUS)	dB	≥ 40	≥ 35
· Auto Stop Level	dB	58	58 ± 6

□GENERAL

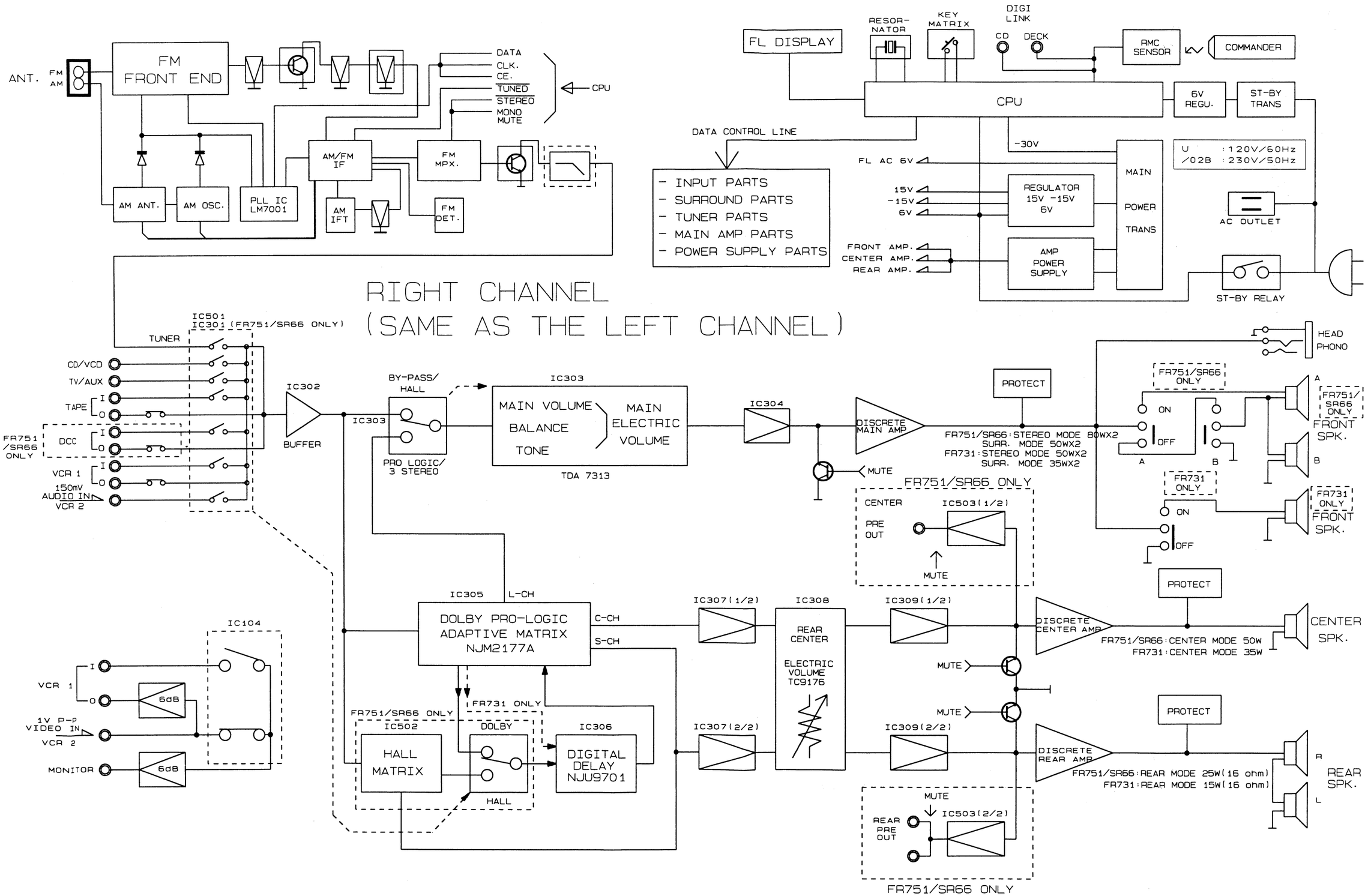
· Speaker load impedance ---------- 8 Ω
· Power consumption:
  No load, No signal ---------- 50 Watts
  1/8 W Pmax. ---------- 210 Watts
  $P_{max.}$(Undistorted) with outlet ---------- 650 Watts
· Dimensions(WxHxD) ---------- 435 x 125 x 350 mm
· Weight(Net.) ---------- 11.8 Kg(26 lbs)

□POWER REQUIREMENTS

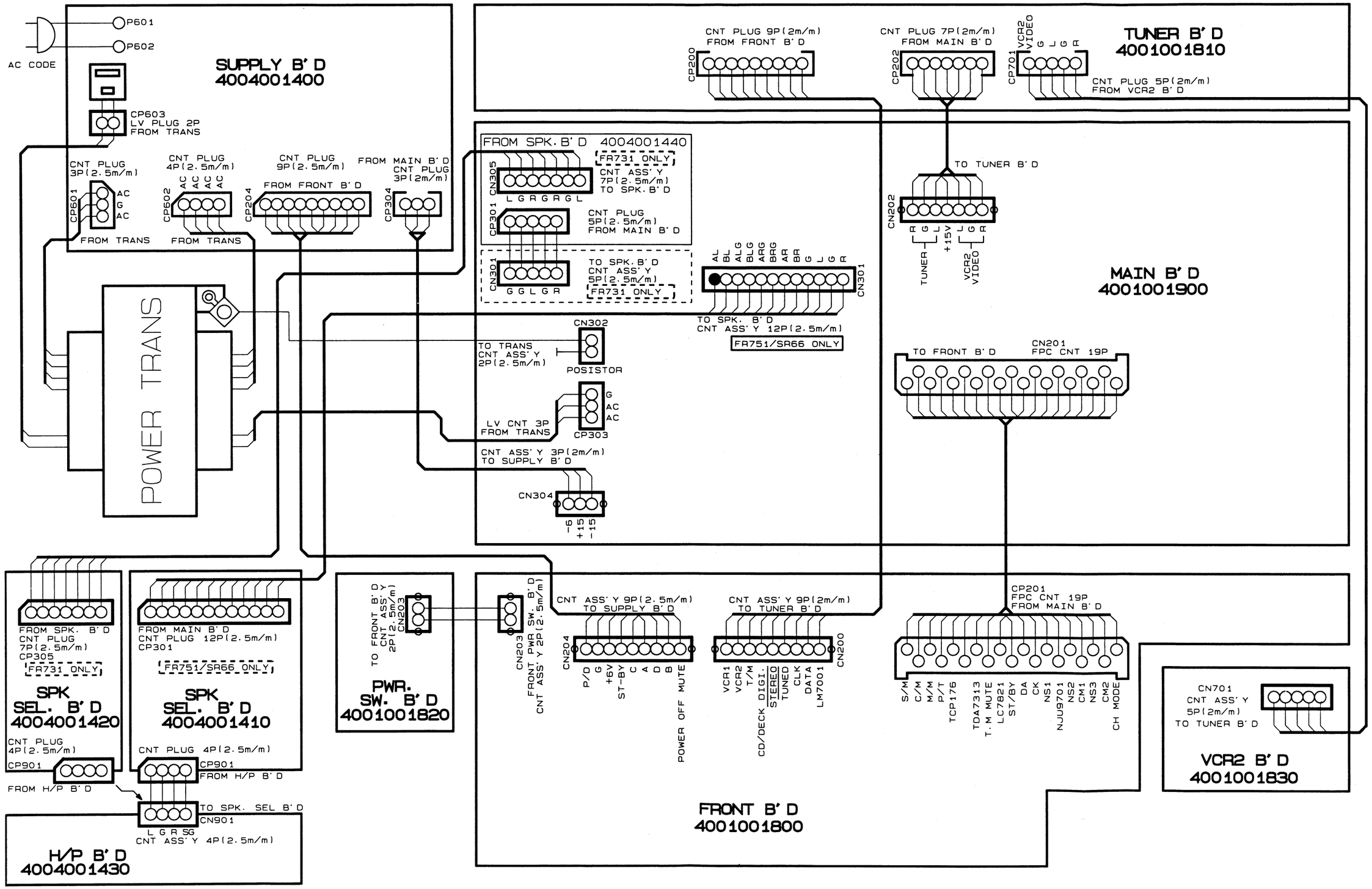
U ---------- 120 V, 60 Hz
/02B ---------- 230 V, 50 Hz

Notes: Norminal specs represent the design specs. All units should be able to approximate these, some will exceed and some may drop slightly below these specs.
Limit specs represent the absolute worst condition that still might be considered acceptable: In no case should a unit fail to meet limit specs.

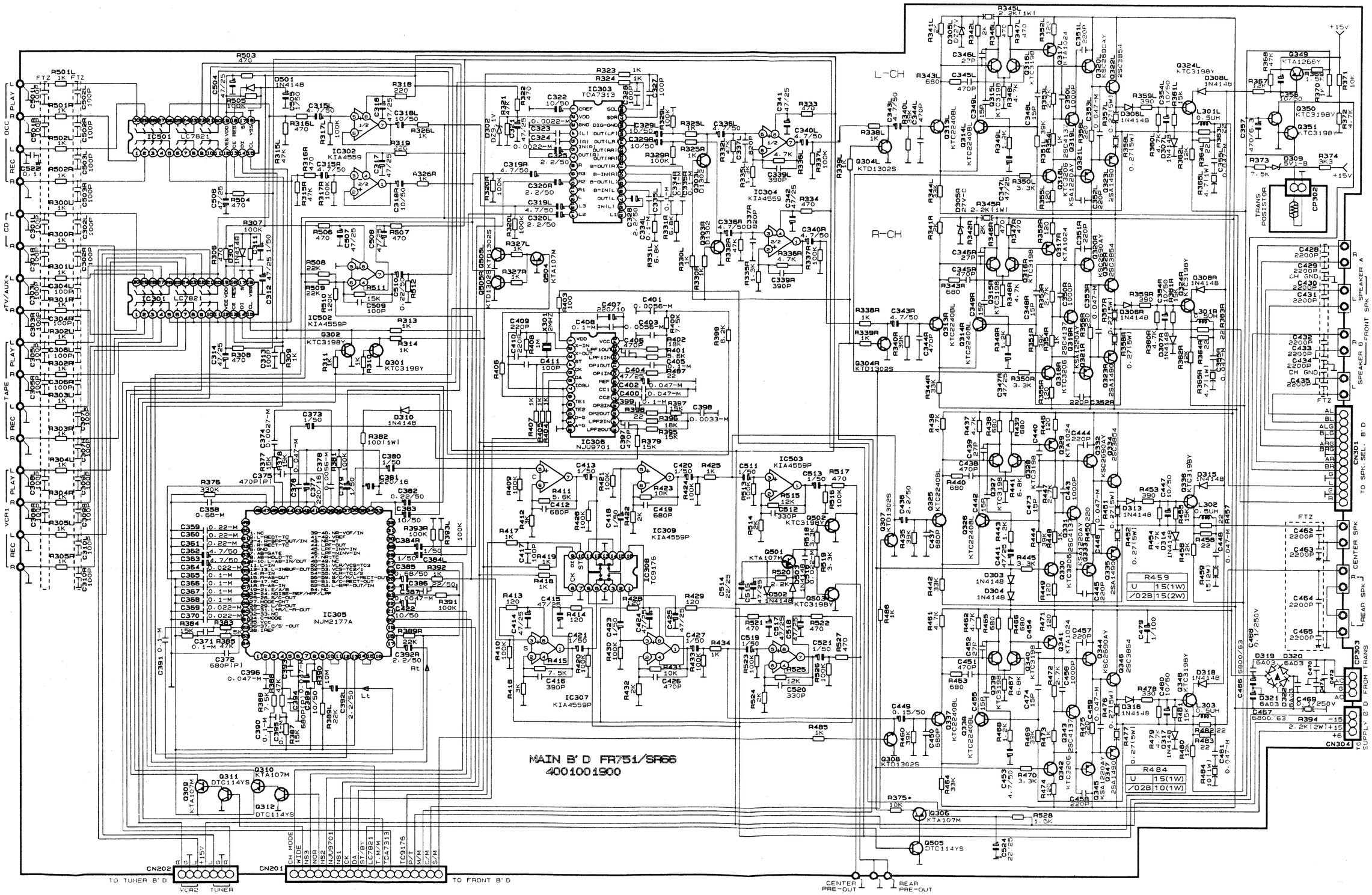
2. BLOCK DIAGRAM



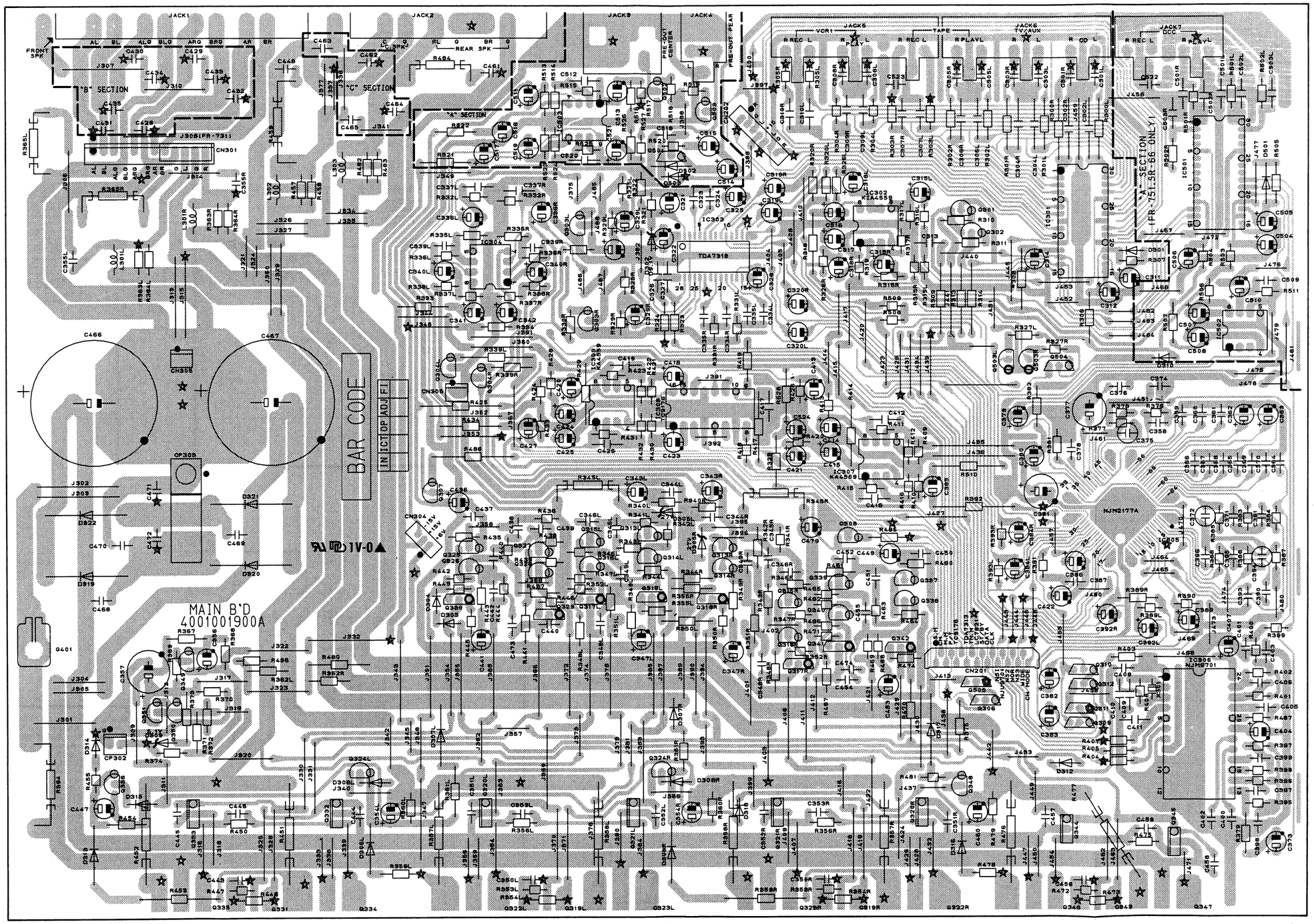
3. WIRING DIAGRAM



4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)



P.C.Board Main(4001001900)



FR751/SR66/FR731
TUNER B' D
4001001810

*REMARK

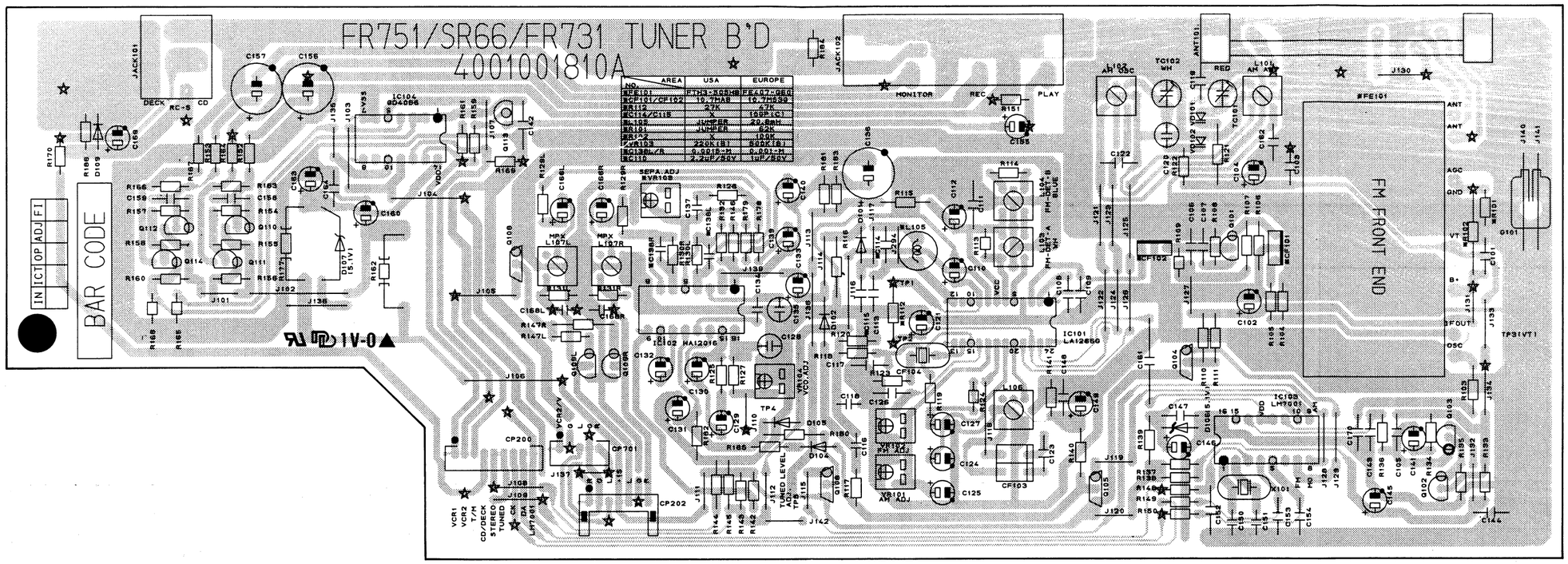
NO / AREA	U	/02B
*FE101	FTH3-505HB	FE407-G60
*CF101 CF102	10.7MA8	10.7MS3G
*R112	27K	47K
*C114/ C115	-	100P(C)
*L105	JUMPER	20.8mH
*R101	JUMPER	62K
*R102	-	100K
*VR103	220K(B)	500K(B)
*C138L/R	0.0015-M	0.001-M
*C110	2.2/50	1/50

FR751/FR731
VCR2 B' D
4001001830

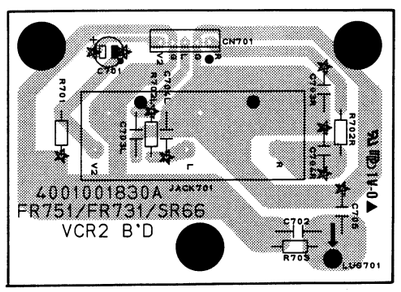
NOTES
1. Resistance value are indicated ohms unless otherwise specified (K=1.000 M=1.000.000)
2. Capacitance value are shown in microfarades unless otherwise noted (P=micro-microfarade)

CAUTION
Safty precaution to be followed during servicing
1) Since these parts maked with ⚠ are critical part for safty use the one deservised the part list
2) Before returning the receiver to the customer make appropriate leakage current or resistance exposed part are property insulated from the supply circuit

P.C.Board Tuner(4001001810)



NO.	AREA	USA	EUROPE
	FE101	FH33-A68HB	FE447-G60
	RCP101/CP102	10.7MAB	10.7MA39
	RR112	47K	47K
	RC114/C115	X	180P(CC)
	RL105	JUMPER	20.8mH
	RR101	JUMPER	82K
	RR102	X	150K
	VR103	220K(B)	500K(B)
	RC138/9	0.001u-H	0.001u-H
	RC110	X.22uF/25V	1uF/25V



P.C.Board VCR2 (4001001830)

FR751/SR66/FR731
FRONT B' D
4001001800

NO / AREA	U	/02B
R236	4.7	JUMPER
R237	4.7	JUMPER

FL101

FM AM MW LW VOL

AUTO MHZ KHZ MUTE TEST

MEMO STEREO MONO

VIDEO 12

SLEEP CH NR WI PH

S16 S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1

T6 T5 T4 T3 T2 T1 T0

C200 0.047 C201 0.047

R236 R237

POWER OFF MUTE
(FL AC) B
(FL AC) D
(-30V) A
C
ST/BY
+6
G
PD

CN204 TO POWER SUPPLY B' D

R224 470 (1W) D218 1N4002

C209 100/35

C205 47/35

D214 DZ15V D215 DZ15V D217 DZ15V

R225 15K

R221 10K FA731 ONLY
LO: FR751/SR66
HI: FR731

D204 D205 D206
DOLBY LED
3-CH LED
HALL LED
FA751 ONLY

R205 100 R206 100 R207 100

IC200 μPD78044GF

X200 4.19MHZ

R215 180 D210

D209 1N4148 D208 1N4148 D207 1N4148

R208 68K R209 68K R210 68K

C203 0.1 C202 47/10 C204 0.047/25 D211 1N4148 D212 1N4148

C206 1/50

Q200 KTC3198Y R213 220K

D218 1N4148 R226 10K C210 10/50 R227 330

LO: U
HI: /02B

R235 3K DTC114YS Q213

D213 1N4148 R220 1K

R214 47K R228 47K R216 47K

R223 4.7K

R222 100

R231 3.3K D221 1N4148 D220 DZ5.6V

Q205 KTC3198Y Q212 KTA1037M Q211 KTC114YS

R212 330

RMC201

R233 22K D216 DZ4.3V VOL SW.

R218 68K R217 68K

SV200

C207 0.01 C208 0.01

R211 10K R234 10K C211 10/50

R219 100

Q203 DTC114YS Q207 DTC114YS Q208 KTA1037M

Q202 DTC114YS Q206 DTC114YS Q209 KTA1037M

Q201 DTC114YS Q204 DTC114YS Q210 KTA1037M

CN203 TO PWR SW B' D

CN203 SW203 PWR. SW

FR751/FR731/SR66
POWER SW B' D
4001001820

TO FRONT B' D

TUNING UP SW200 TUNING DW SW204 BASS SW210 TREBLE SW211 BALANCE SW214

#61 D200 1N4148

TAPE SW201 FM SW205 FA751/SR66 ONLY SW208 VCR2 SW212 VCR1 SW215

#62 D201 1N4148

CD/V-CD SW202 AM SW206 TV/AUX SW209 PROG. SW213 TUNING/PRESET SW216

#63 D202 1N4148

POWER SW203 SURR. SW207

#64 D203 1N4148

#39 #40 #41 #42 #43

R200 4.7K R201 4.7K R202 4.7K R203 4.7K R204 4.7K

VCR1 VCR2 T/MUTE CD/DECK DI STEREO TUNED CLK DA LA7001

CN200 TO TUNER B' D

CH MODE WIDE(CM1) NS3 NOR(CM2) NS2 NJU9701 NS1 CK DA ST/BY LC7821 T.M MUTE TDA7313 TC9176 P/T M/M C/M S/M

CP201 TO MAIN B' D

NOTES

1. Resistor values are indicated in ohms unless otherwise specified (K=1.000 M=1.000.000)
2. Capacitor values are indicated in microfarades unless otherwise specified. (p=micro-microfarades)

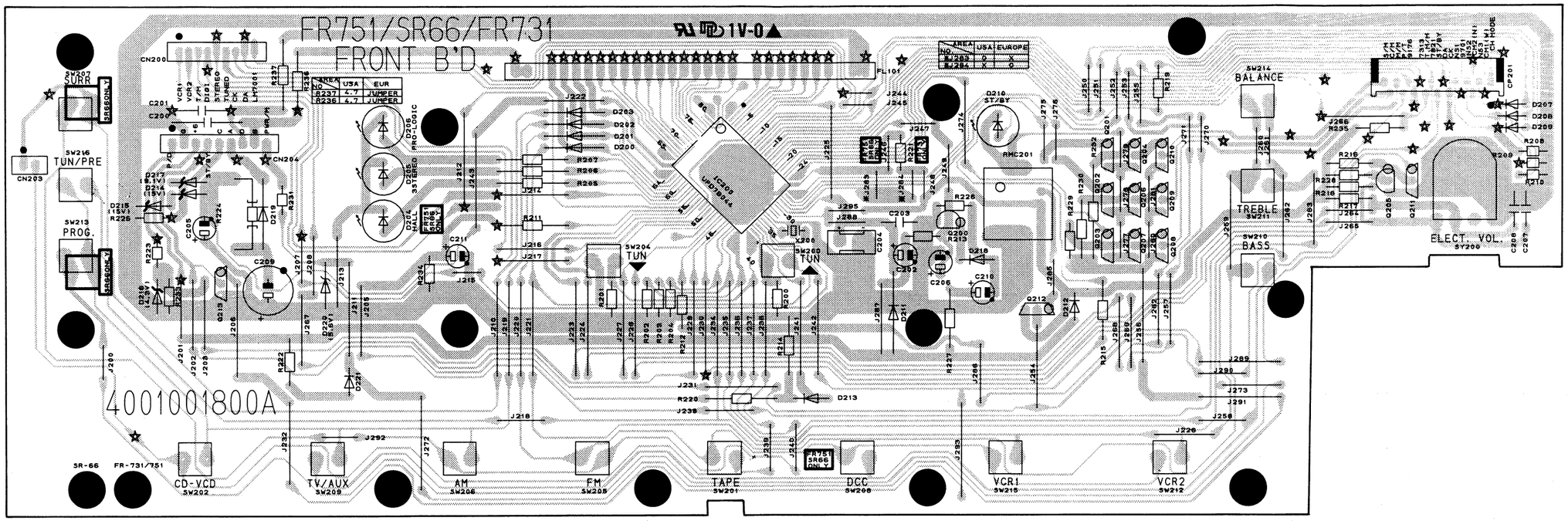
CAUTION

Safety precaution to be followed during servicing

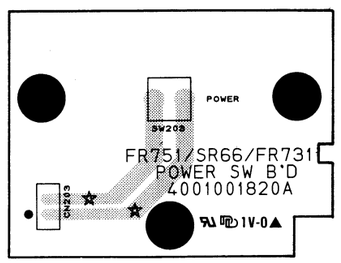
1) Since those parts marked with ⚠ are critical parts for safety. use only the one described in the parts list

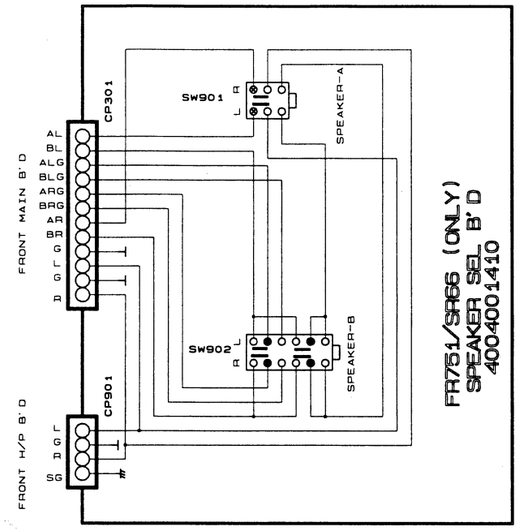
2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

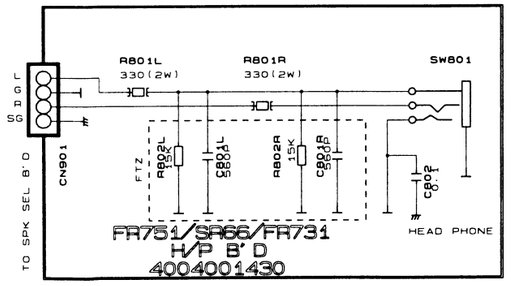
P.C.Board Front(4001001800)

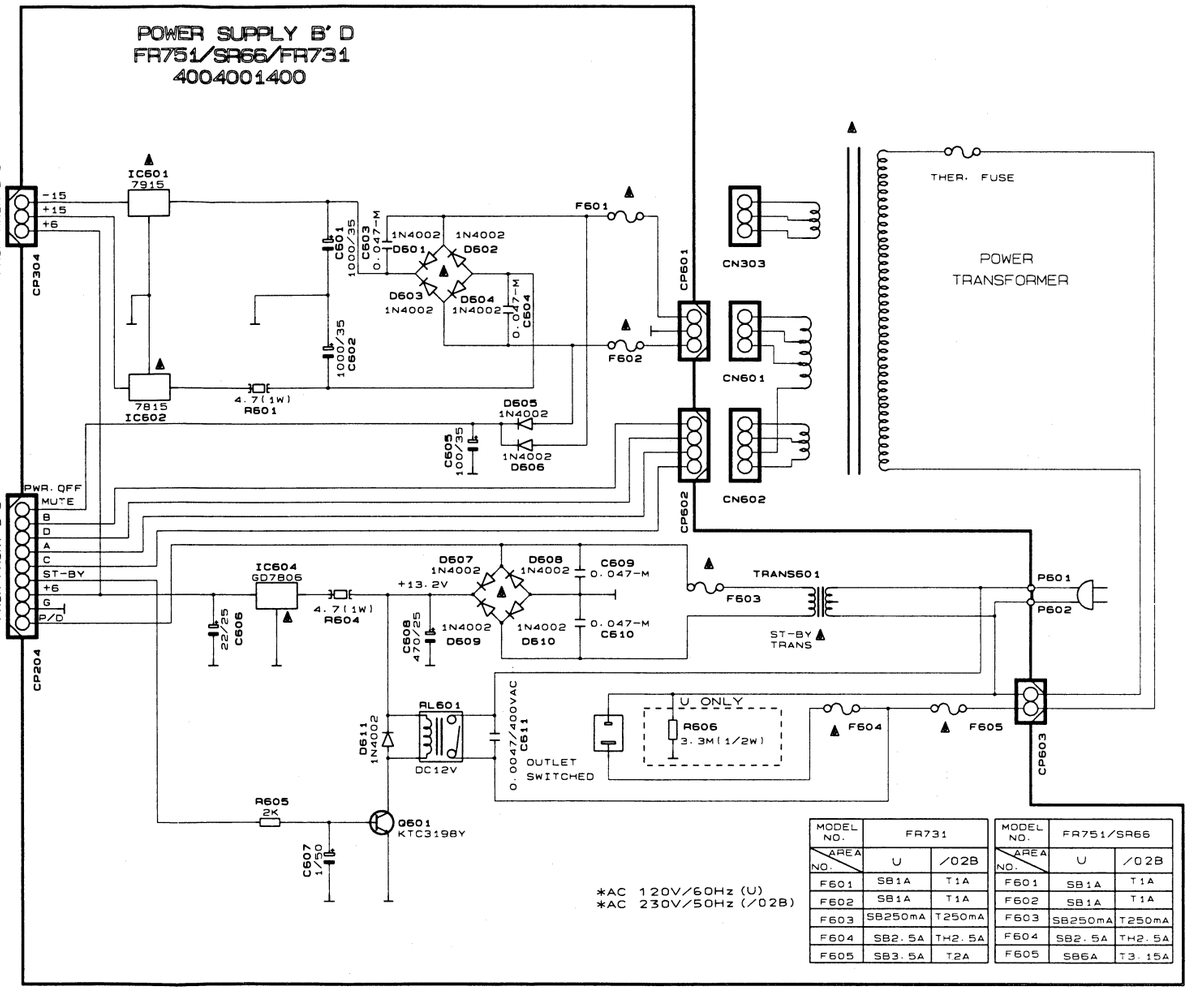


P.C.Board Power Switch (4001001820)









*AC 120V/60Hz (U)
*AC 230V/50Hz (/02B)

MODEL NO.	FR731	
AREA NO.	U	/02B
F601	SB1A	T1A
F602	SB1A	T1A
F603	SB250mA	T250mA
F604	SB2.5A	TH2.5A
F605	SB3.5A	T2A

MODEL NO.	FR751/SR66	
AREA NO.	U	/02B
F601	SB1A	T1A
F602	SB1A	T1A
F603	SB250mA	T250mA
F604	SB2.5A	TH2.5A
F605	SB6A	T3.15A

NOTES

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2. Capacitor values are indicated in microfarades unless otherwise specified. (p=micro-microfarades)

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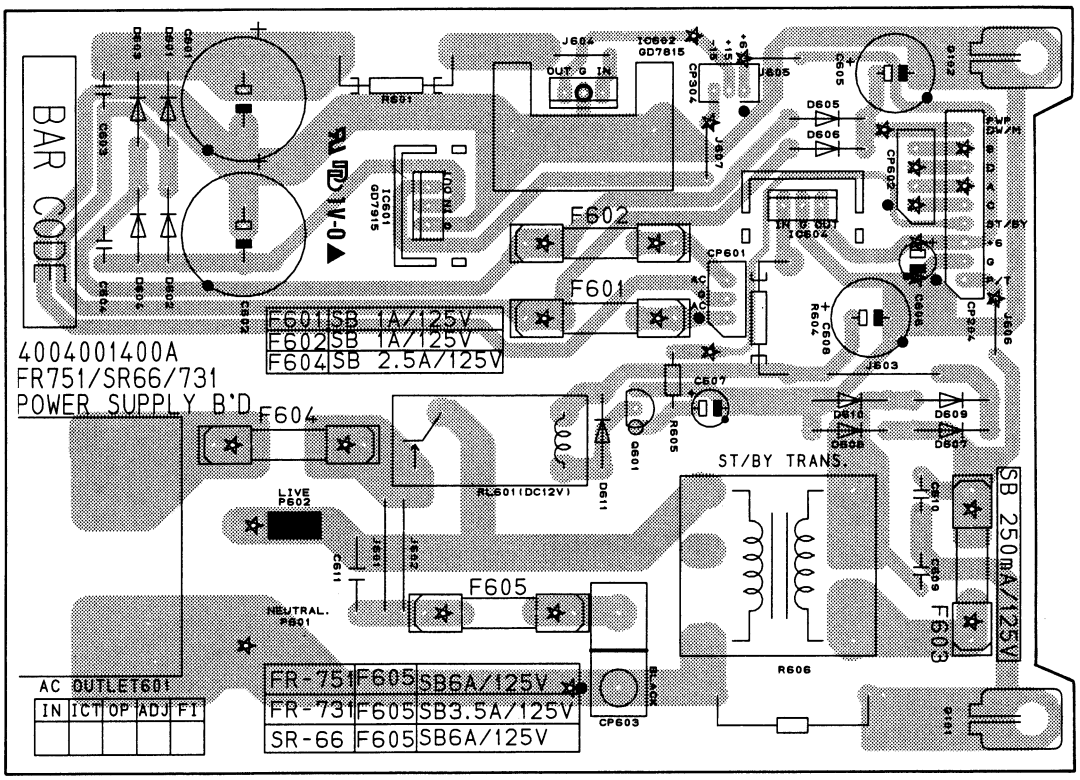
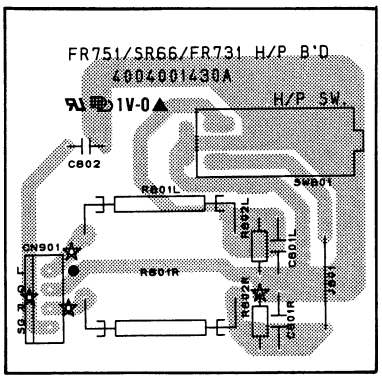
2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit

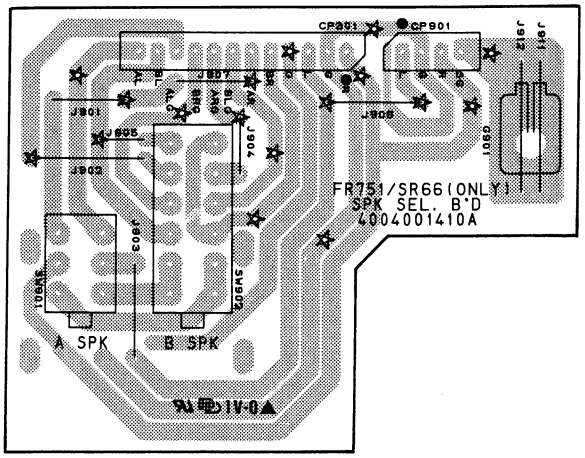
P.C.Board Power Supply (4004001400)



P.C.Board Headphone (4004001430)



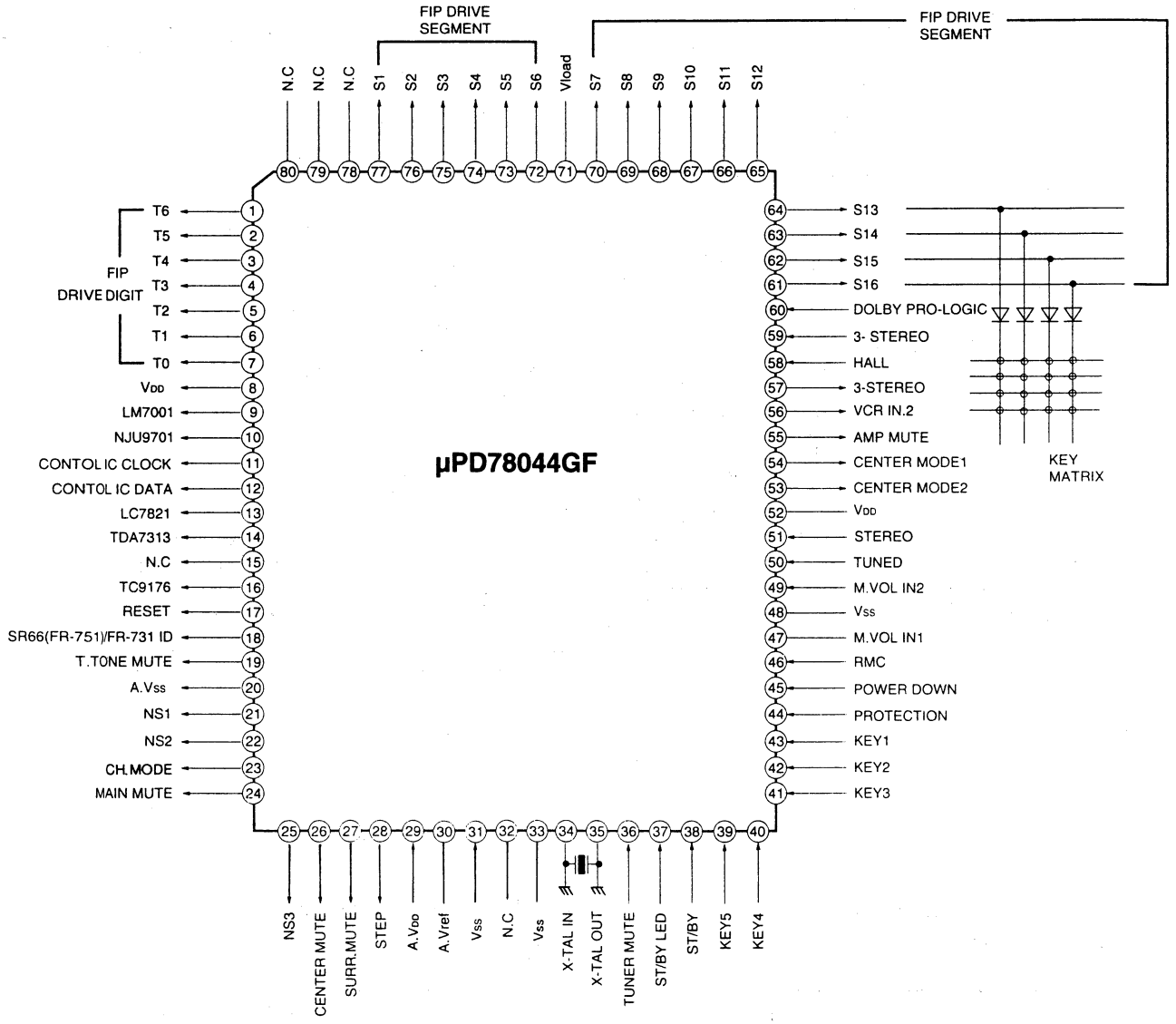
P.C.Board Speaker Selector (4004001410)



5. SERVICE TEST PROGRAM OF THE MICROPROCESSOR

IC200 : μPD78044GF (8-bit CMOS Microprocessor)

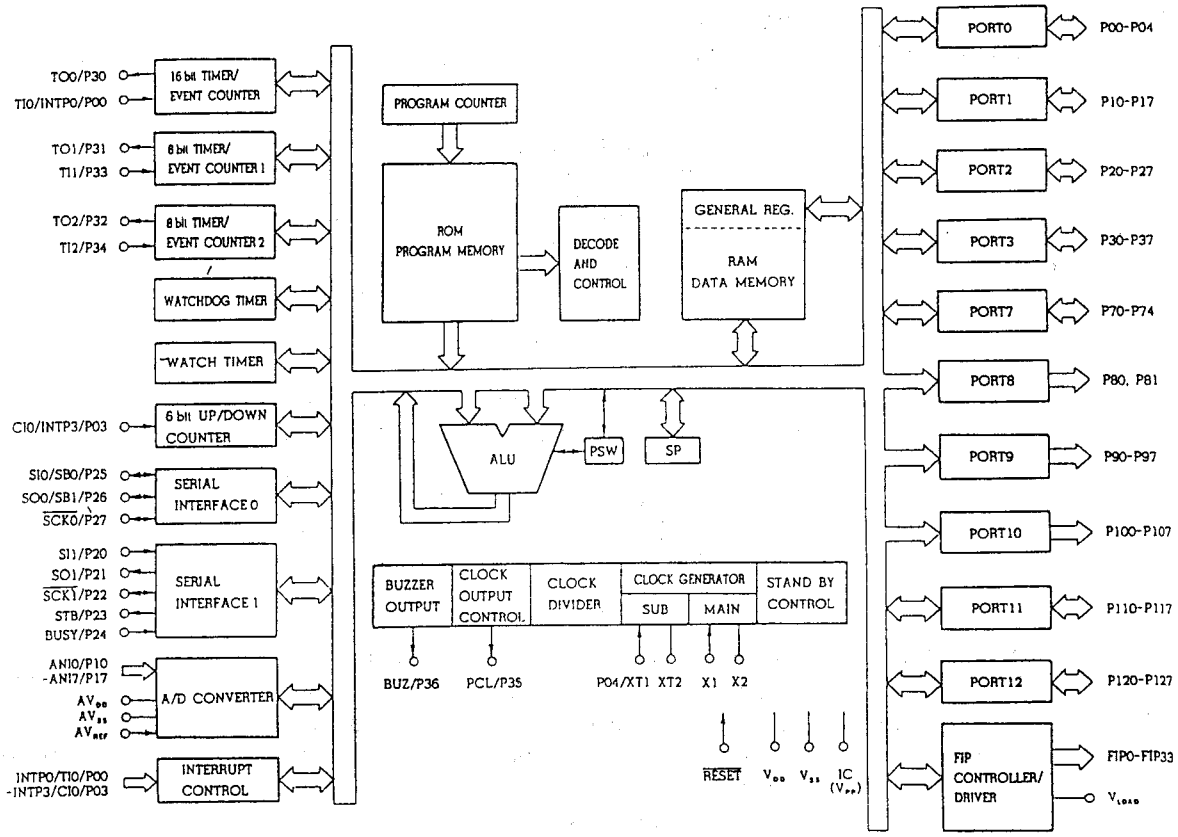
1. Pin Configuration



2. Key Matrix

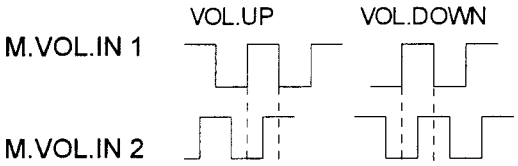
IN \ OUT	K. SCAN0 PIN 61	K. SCAN1 PIN 62	K. SCAN2 PIN 63	K. SCAN3 PIN 64
KEY IN1 PIN 43	BALANCE	VCR1	TUNING/ PRESET	–
KEY IN2 PIN 42	TREBLE	VCR2	PROGRAM	–
KEY IN3 PIN 41	BASS	DCC	TV/AUX	–
KEY IN4 PIN 40	TUNING DOWN	FM	AM	SURROUND
KEY IN5 PIN 39	TUNING UP	TAPE	CD	POWER

3. Block Diagram



4. Pin Functions

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>1 - 7</td><td>T_6 - T_0</td><td>Grid signal output for FIP.</td></tr>
<tr><td>8</td><td>V_{DD}</td><td>+5V power supply.</td></tr>
<tr><td>9</td><td>LM7001</td><td>Chip enable output for LM7001.</td></tr>
<tr><td>10</td><td>NJU9701</td><td>Chip enable output for NJU9701.</td></tr>
<tr><td>11/12</td><td>CLK/DATA</td><td>CLOCK/DATA output for TDA7313, TC9176, NJU9701, LC7821, TC9176 and LM7001.</td></tr>
<tr><td>13</td><td>LC7821</td><td>Chip enable output for LC7821.</td></tr>
<tr><td>14</td><td>TDA7313</td><td>Chip enable output for TDA7313.</td></tr>
<tr><td>15</td><td>NC</td><td>Not used !</td></tr>
<tr><td>16</td><td>TC9176</td><td>Chip enable output for TC 9176.</td></tr>
<tr><td>17</td><td>RESET</td><td>Input for resetting CPU.(At "H", it is active.)</td></tr>
<tr><td>18</td><td>SR-66(FR-751) / FR-731 ID</td><td>Input for selecting SR-66(FR-751) or FR-731 mode.
According to each mode, data input is as follows.
<table><tr><th>MODE</th><th>INPUT</th></tr><tr><td>SR-66(FR-751)</td><td>L</td></tr><tr><td>FR-731</td><td>H</td></tr></table></td></tr>
<tr><td>19</td><td>T. TONE MUTE</td><td>Output for PRO-LOGIC test tone mute.
(At "H", it is active.)</td></tr>
<tr><td>20</td><td>A.V_{SS}</td><td>Analog ground.</td></tr>
<tr><td>21/22/25</td><td>NS1/NS2/NS3</td><td>Control data output for selectings channel in the test tone mode.
Setting are as follows.
<table><tr><th>SELECTION</th><th>NS 1</th><th>NS 2</th><th>NS 3</th></tr><tr><td>TEST TONE(OFF)</td><td>H</td><td>△</td><td>△</td></tr><tr><td>LEFT</td><td>L</td><td>L</td><td>L</td></tr><tr><td>CENTER</td><td>L</td><td>L</td><td>H</td></tr><tr><td>RIGHT</td><td>L</td><td>H</td><td>L</td></tr><tr><td>SURROUND</td><td>L</td><td>H</td><td>H</td></tr></table>△: Previous states</td></tr>
<tr><td>23</td><td>CH. MODE</td><td>Port for settings of PRO-LOGIC and 3-STEREO mode.
According to each mode, data output is as follows.
<table><tr><th>MODE</th><th>OUTPUT</th></tr><tr><td>3-STEREO</td><td>High impedance</td></tr><tr><td>PRO-LOGIC</td><td>H</td></tr><tr><td>OTHERS</td><td>L</td></tr></table></td></tr>
<tr><td>24</td><td>MAIN MUTE</td><td>Output for main mute.(At "H", it is active.)</td></tr>
<tr><td>26</td><td>CENTER MUTE</td><td>Output for center mute.(At "H", it is active.)</td></tr>
<tr><td>27</td><td>SURR. MUTE</td><td>Output for surround mute.(At "H", it is active.)</td></tr>
<tr><td>28</td><td>STEP</td><td>According to region, input for selecting the frequency band and the steps of FM and AM.
Settings are as follows.
<table><tr><th>REGION</th><th>FREQUENCY BANDS</th><th>STEPS</th><th>STEP</th></tr><tr><td>AMERICA</td><td>FM: 87.5 - 108 MHz
AM: 520 - 1710 kHz</td><td>100 kHz
10 kHz</td><td>L</td></tr><tr><td>EUROPE</td><td>FM: 87.5 - 108 MHz
AM: 522 - 1611 kHz</td><td>50 kHz
9 kHz</td><td>H</td></tr></table></td></tr>
<tr><td>29</td><td>A.V_{DD}</td><td>Connected to V_{DD}.</td></tr>
<tr><td>30</td><td>A.V_{ref}</td><td>Reference Voltage.(Connected to +5V, Not VDD.)</td></tr>
<tr><td>31</td><td>V_{SS}</td><td>Ground.</td></tr>
</table>

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>32</td><td>NC</td><td>Not used !</td></tr>
<tr><td>33</td><td>V_{SS}</td><td>Ground.</td></tr>
<tr><td>34</td><td>X-TAL IN</td><td>Input for crystal oscillator.</td></tr>
<tr><td>35</td><td>X-TAL OUT</td><td>Output for crystal oscillator.</td></tr>
<tr><td>36</td><td>TUNER MUTE</td><td>Output for tuner mute.(At "H", it is active.)</td></tr>
<tr><td>37</td><td>ST/BY LED</td><td>Output for driving stand by LED.(At "H", it is active.)</td></tr>
<tr><td>38</td><td>ST/BY</td><td>When the power is on, control data output is "H".
When the power is off, control data output is "L"
and last memory function is actived.</td></tr>
<tr><td>39 - 43</td><td>KEY5 - KEY1</td><td>Data input for key scan.</td></tr>
<tr><td>44</td><td>PROTECTION</td><td>Signal input for protection.</td></tr>
<tr><td>45</td><td>POWER DOWN</td><td>Input for power down.(At "L", it is active.)</td></tr>
<tr><td>46</td><td>RMC</td><td>Input for remocon data.(At "L", it is active.)</td></tr>
<tr><td>47/49</td><td>M.VOL. IN1/IN2</td><td>Input for main volume up/down.
 
</td></tr>
<tr><td>48</td><td>V_{SS}</td><td>Ground</td></tr>
<tr><td>50</td><td>TUNED</td><td>Input for detecting station during tuning.
If "L" is inputed during tuning, tuning stops at that frequency.</td></tr>
<tr><td>51</td><td>STEREO</td><td>Input for lighting the STEREO indicator.(At "L", it is active.)</td></tr>
<tr><td>52</td><td>V_{DD}</td><td>+5V power supply.</td></tr>
<tr><td>53/54</td><td>CENTER MODE
2/1</td><td>Control data output for center mode in the DOLBY PRO-LOGIC and the 3-STEREO mode.
Settings are as follows.
<table><tr><th>CENTER MODE</th><th>C.M.1</th><th>C.M.2</th></tr><tr><td>NORMAL, OFF</td><td>L</td><td>H</td></tr><tr><td>WIDE</td><td>H</td><td>L</td></tr><tr><td>PHANTOM</td><td>L</td><td>L</td></tr></table></td></tr>
<tr><td>55</td><td>AMP MUTE</td><td>Output for Amp mute.(At "H", it is active.)</td></tr>
<tr><td>56/57</td><td>VCR IN.1 /
VCR IN.2</td><td>Control data output for selecting VCR1 or VCR2 video signal.
According to each mode, data output is as follows.
<table><tr><th>MODE</th><th>VCR IN.1</th><th>VCR IN.2</th><th>REMARKS</th></tr><tr><td>VCR 1</td><td>H</td><td>L</td><td rowspan="2">Enitial settings</td></tr><tr><td>VCR 2</td><td>L</td><td>H</td></tr><tr><td>OTHERS</td><td>△</td><td>△</td><td>△: Previous state</td></tr></table>※Last memory function is available.</td></tr>
<tr><td>58</td><td>HALL
(FR-751/SR-66 Only)</td><td>Output for driving HALL LED.(At "H", it is active.)</td></tr>
<tr><td>59</td><td>3-STEREO</td><td>Output for driving 3-STEREO LED.(At "H", it is active.)</td></tr>
<tr><td>60</td><td>DOLBY PRO-LOGIC</td><td>Output for driving DOLBY PRO-LOGIC LED.(At "H", it is active.)</td></tr>
<tr><td>61 - 70</td><td>S16 - S7</td><td>Segment signal output for FIP.</td></tr>
<tr><td>71</td><td>V_{load}</td><td>-30V power supply for FIP.</td></tr>
<tr><td>72 - 77</td><td>S6 - S1</td><td>Segment signal output for FIP.</td></tr>
<tr><td>78 - 80</td><td>NC</td><td>Not used !</td></tr>
</table>

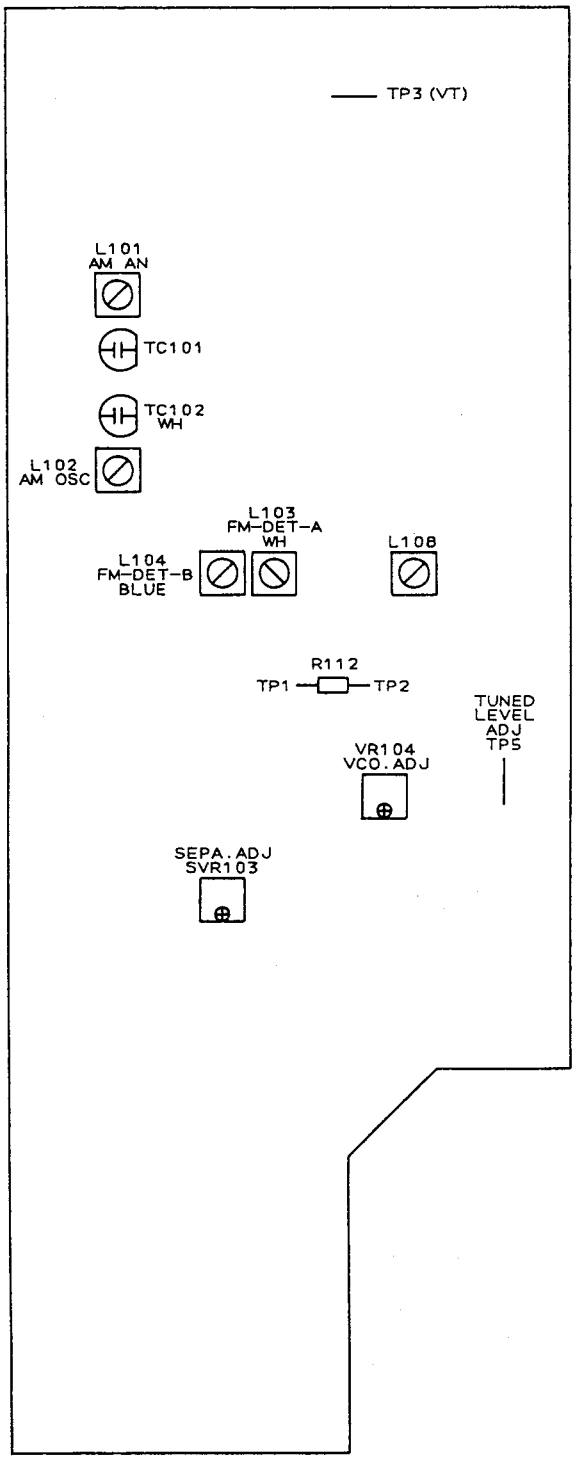
6. ALIGNMENT PROCEDURES

1. Equipment Required

- AM signal generator
- Oscilloscope
- AC voltmeter
- FM signal generator
- Stereo modulator
- Audio generator
- Distortion meter
- DC voltmeter
- Frequency counter

Note : Remove line cord antenna from FM external antenna terminal when aligning.

2. Alignment and Test Points (Tuner P.C.Board)



3. AM IF, RF and Tuning Voltage Alignment

Preparation :

1. Output of Signal Generator should not be higher than necessary to obtain an optimum output reading.
2. Signal Generator Modulation : 30%
3. Switch : Press to AM.

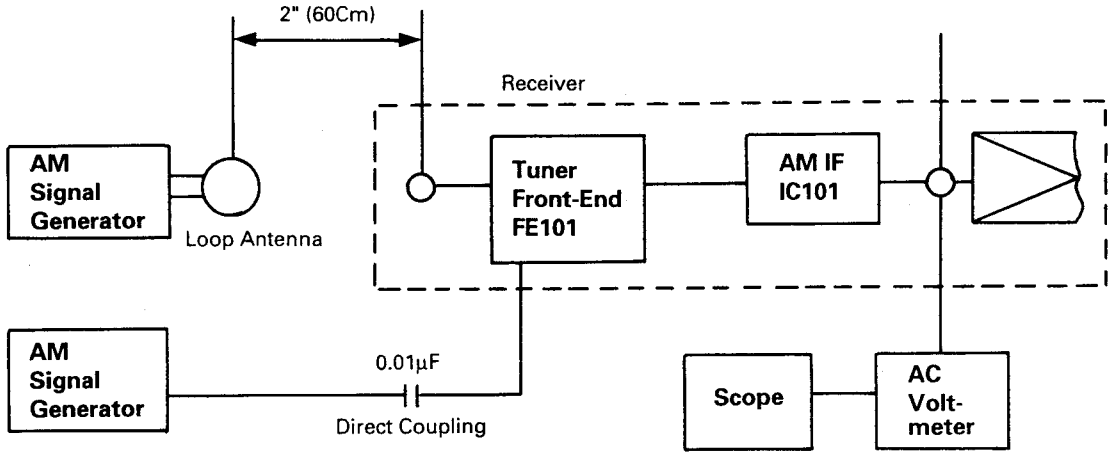
Step	Signal Generator Frequency	Receiver Frequency on the Display	Equipment Connection	Adjustment point	Adjust for
AM RF ADJ	1000 kHz (EUR : 999 kHz) (400 Hz, Mod.)	Place at a noninterfer-ence spot around 1000 kHz(EUR 999 kHz)	AC voltmeter to TAPE OUT jack.	L106 (IFT)	Maximum reading
AM RF ADJ	600 kHz (EUR : 603 kHz) (400 Hz, Mod.)	EUR (603 kHz) 600 kHz	Same as Step 1.	L101 (ANT Coil)	Same as Step 1
	1400 kHz (EUR : 1404 kHz) (400 Hz, Mod.)	EUR (1404 kHz) 1400 kHz	Same as Step 1.	TC101 (ANT Trimmer)	Same as Step 1
	1000 kHz (EUR : 999 kHz) (400 Hz, Mod.)	EUR (999 kHz) 1000 kHz	DC Voltmeter to TP5	VR101 (AM ADJ)	DC Voltage 200 mV
AM Tunning Voltage ADJ	520 kHz (EUR : 522 kHz)	520 kHz (EUR : 522 kHz)	DC Voltmeter to TP3	L102 (AM OSC Coil)	DC Voltage 1.0~1.2V
	1710 kHz (EUR : 1611 kHz)	1710 kHz (EUR : 1611 kHz)	DC Voltmeter to TP3	TC102 (ANT Trimmer)	DC Voltage 8.5~9V

4. FM IF Alignment

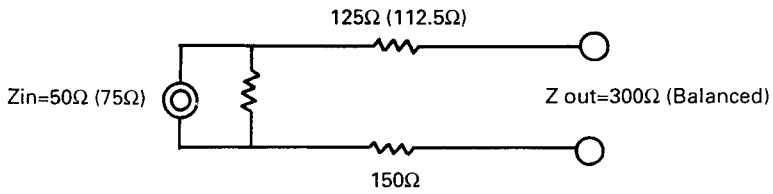
Preparation

1. Signal Generator output should be no higher than necessary to obtain an optimum output reading.
2. Switch : Press to FM.
3. Signal generator deviation : 75 kHz.
4. Be sure to disconnect FM line cord antenna during alignment.

Step	Signal Generator Frequency	Receiver Frequency on the Display	Equipment Connection	Adjustment point	Adjust for
1	98.1 MHz (EUR : 98.0 MHz) (1 kHz, Mod.)	98.1 MHz (EUR : 98.0 MHz)	Distortion meter to TAPE OUT jack	L104 (FM DETECT -B Coil)	Minimum distortion
2	98.1 MHz (EUR : 98.0 MHz) (1 kHz, Mod.)	98.1 MHz (EUR : 98.0 MHz)	DC Voltmeter to TP5	VR102 (FM ADJ)	Zero reading on AC voltmeter with SSG output level of 28dBf
3	98.1 MHz (EUR : 98.0 MHz)	98.1 MHz (EUR : 98.0 MHz)	DC Voltmeter to TP2 (R112)	L103 (FM DETECT-A Coil)	Zero Voltage reading on DC Voltmeter



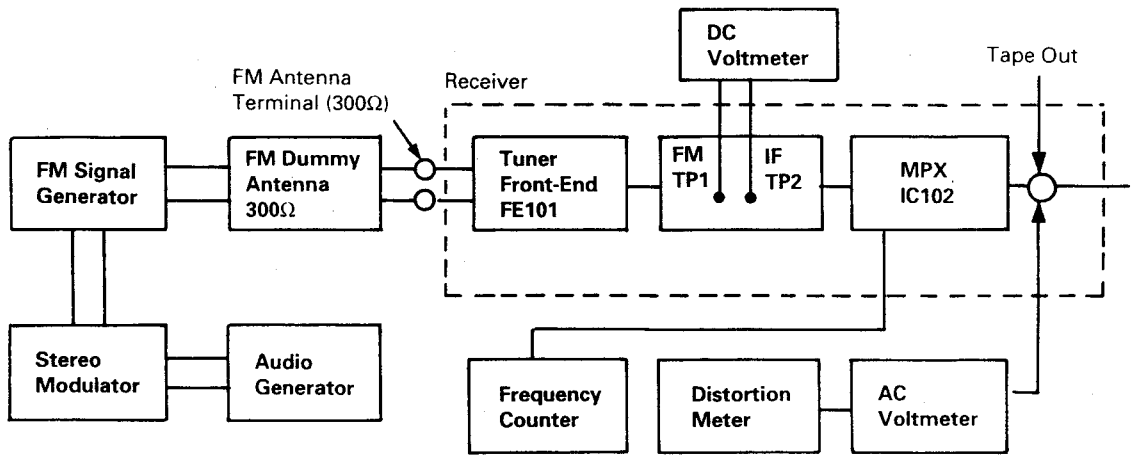
AM Alignment Connection



FM Dummy Antenna to 300Ω Antenna terminal of receiver

FM Dummy Antenna

5. MPX Alignment



FM RF/IF and MPX Alignment Connection

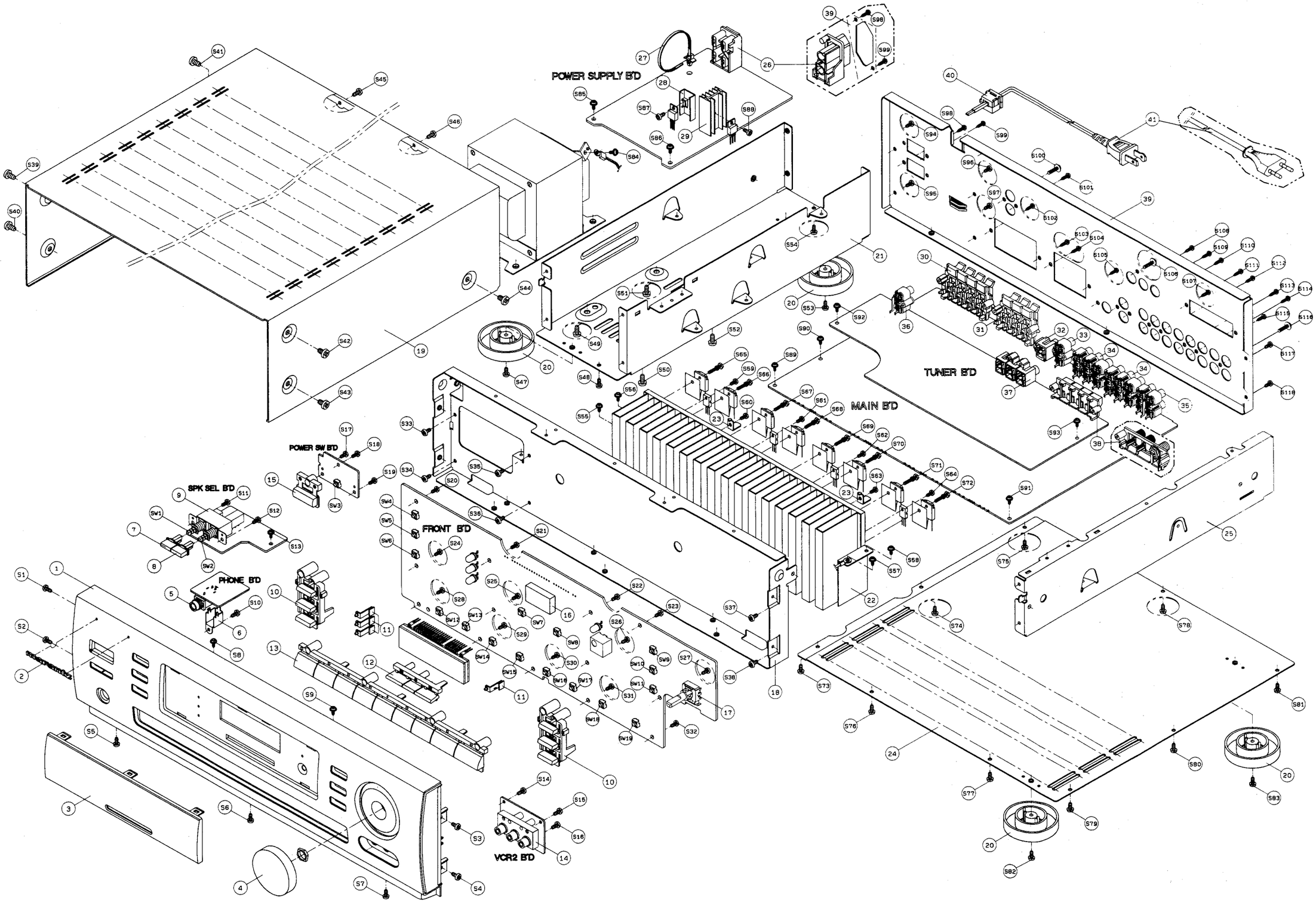
Preparation :
1. Switch : Press to FM.
2. Tune for 98 MHz on band.
3. Signal Generator output level : 1mV
4. Deviation : 75 kHz, at 100% modulation of composite signal.
5. Connect Signal Generator to FM antenna terminal through FM dummy antenna (300Ω)

Step	19 kHz Modulation Level	Signal Generator Frequency Setting	Output Indicator Connection	Adjust Point	Adjust for
4	8% Mod.	Composite to channel 1 kHz "L" CH.	AC voltmeter to TAPE OUT jack of R channel	VR103 (SEP ADJ)	AC voltmeter reading should be at least –28 dB
5	8% Mod.	Composite to channel 1 kHz "R" CH.	AC voltmeter to TAPE OUT jack of L channel	VR103 (SEP ADJ)	Same as Step 3.
If you could not obtain –35dB readings in Steps 4 and 5 (compared with Step 2), readjust VR103 until you obtain –28 dB readings for both Steps 4 and 5. Nominal is –32 dB.					

7. EXPLODED VIEW AND PARTS LIST

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			Cabinet & Chassis	
1		4822 459 04136	Front Panel	168W248010
2		NSP	Badge Marantz AL	168W251010
3		4822 450 10095	Window Display	168W158010
4		4822 410 10382	Knob Main Volume	168W154010
5		4822 267 31992	Jack Phone Gold	*YT000830R
7		4822 410 10383	Push 1Key Speaker L	168W270050
8		4822 410 10384	Push 1Key Speaker R	168W270060
10		4822 410 10385	Button 3Key Control	168W270020
12		4822 410 10386	Button 3Key Tuning	198W270030
13		4822 410 10387	Button 9Key Function	168W270010
14		4822 265 31321	Jack RCA 3P Gold	*YT000870R
15		4822 410 10388	Button 1Key Power	168W270040
20		4822 462 10695	Foot	168W057010
26	U	NSP	Mains Outlet 2P	*YT000910R
26	/02B	4822 267 31994	Mains Outlet 1P	*YT000920R
30		4822 290 81739	Terminal Speaker 8P	*YT000790R
31		4822 290 81737	Terminal Speaker 6P	*YT000800R
32		4822 265 20743	Jack RCA 1P	*YT000890R
33		4822 265 20742	Jack RCA 2P	*YT000880R
34		4822 267 41251	Jack RCA 6P	*YT000840R
35		4822 265 20741	Jack RCA 4P	*YT000860R
36		4822 267 31993	Jack Remote 2P	*YT000850R
37		4822 267 41253	Jack RCA 3P	*YT000900R
38	U	NSP	Terminal Antenna 4P	*YT000810R
38	/02B	4822 290 81738	Terminal Antenna 4P	*YT000820R
41	U	NSP	Mains Cord	*YC000300R
41	/02B	4822 321 10364	Mains Cord	*YC000310R
			Miscellaneous	
Q319L/R		4822 130 63899	2SC4137	*HT300410R
Q322L/R		4822 130 63895	2SC3854	*HT300420R
Q323L/R		4822 130 63894	2SA1490	*HT100240R
Q331		4822 130 63899	2SC4137	*HT300410R
Q334		4822 130 63895	2SC3854	*HT300420R
Q335		4822 130 63901	2SA1489	*HT100250R
Q343		4822 130 63899	2SC4137	*HT300410R
Q346		4822 130 63902	2SC3853	*HT300430R
Q347		4822 130 63901	2SA1489	*HT100250R
		NSP	FPC 19P 350mm	*YU000280R
T001	U	NSP	Mains Trans. 120V 60Hz	*TS000540R
T001	/02B	4822 146 31508	Mains Trans. 230V 50Hz	*TS000550R
			Accessories	
	U	NSP	FM AERIAL	*ZA000080R
	U	NSP	AM AERIAL	*ZA000090R
001T	U	NSP	USER GUIDE (D.F.U.)	168W851250
001T	/02B	4822 736 14245	USER GUIDE (D.F.U.)	168W851310
003Z		4822 218 10719	REMOTE COMMANDER	ZK168W0010


POWER SUPPLY B'D
MAIN B'D
TUNER B'D
FRONT B'D
PHONE B'D
SPK SEL B'D
POWER SW B'D
VCR2 B'D

8. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R*** : 1) GD05 x x x 140. Carbon film fixed resistor, ±5% 1/4W
R*** : 2) GD05 x x x 160. Carbon film fixed resistor, ±5% 1/6W

① —— Resistance value

Examples :

① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C*** : CERAMIC CAP.

1) DD1x x x x 370. Ceramic capacitor
Disc type
① ② Temp.coeff.P350~N1000.50V
② —— Capacity value
Tolerance

Examples

① Tolerance (Capacity deviation)
± 0.25pF ... 0
± 0.5pF ... 1
± 5% ... 5

* Tolerance of COMMON PARTS handled here are as follows :
0.5pF~ 5pF...±0.25pF
6pF~ 10pF...±0.5pF
12pF~ 560pF...±5%

② Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C*** : CERAMIC CAP.

1) DK16 x x x 300. High dielectric constant ceramic capacitor
① Disc type
Temp.chara. 2B4, 50V
—— Capacity value

Examples

② Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C*** : ELECTROLY CAP.(⧺), FILM CAP.(⫟)

1) EAx x x x x x 10. Electrolytic capacitor
One-way lead type, Tolerance ±20%
① ② —— Working voltage
Capacity value

Examples

① Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...118
		2200μF...228

② Working voltage

6.3V...006	25V...025	
10V...010	35V...035	
16V...016	50V...050	

2) DF15 x x x 350 } Plastic film capacitor
DF15 x x x 310 } One-way type, Mylar ± 5% 50V
DF16 x x x 310 Plastic film capacitor
One-way type, Mylar ± 10% 50V
①
—— Capacity value

Examples

① Capacity value

0.001μF(1000pF)...102	0.1μF...104	
0.0018μF.....182	0.56μF...564	
0.01μF.....103	1μF...105	
0.015μF.....153		

NOTE : 1) The above CODES (R***,R***,C***,C*** and (C***)) are omitted on the schematic diagram in some case.
2) On the occasion, be confirmed the common parts on the parts list.
3) Refer to "Common Parts List" for the other common parts(**RI05, DD4, DK4**).

NOTE ON SAFETY FOR FUSIBLE RESISTOR :

The suppliers and their type numbers of fusible resistors are as follows :

1. KOA Corporation

Part No.	Type No.	Description
NH05 x x x 140	RF25S x x x x Ω J	(±5% 1/4W)
NH05 x x x 120	RF50S x x x x Ω J	(±5% 1/2W)
NH85 x x x 110	RF73B2A x x x x Ω J	(±5% 1/10W)
NH95 x x x 140	RF73B2E x x x x Ω J	(±5% 1/4W)

* Resistance value —— Resistance value (0.1-10kΩ)

2. Matsushita Electronic Components Co., Ltd

Part No.	Type No.	Description
NF05 x x x 140	ERD-2FCJ x x x	(±5% 1/4W)
RF05 x x x 140		
NF02 x x x 140	ERD-2FCG x x x	(±2% 1/4W)
RF02 x x x 140		

* Resistance value —— * Resistance value

Examples :

* Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

ABBREVIATION AND MARKS

1	ANT.	: ANTENNA	2	BATT.	: BATTERY
3	CAP.	: CAPACITOR	4	CER.	: CERAMIC
5	CONN.	: CONNECTING	6	DIG.	: DIGITAL
7	HP	: HEADPHONE	8	MIC.	: MICROPHONE
9	μ-PRO	: MICROPROCESSOR	10	REC.	: RECORDING
11	RES.	: RESISTOR	12	SPK	: SPEAKER
13	SW	: SWITCH	14	TRANSF.	: TRANSFORMER
15	TRIM.	: TRIMMING	16	TRS.	: TRANSISTOR
17	VAR.	: VARIABLE	18	X'TAL	: CRYSTAL
19			20		
21			22		
23			24		
25			26		
27			28		
29			30		

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			P.C.B. Main part	
			Capacitor	
C466		4822 124 11553	E-Cap. 6800μF 63V M	*EA000580R
C467		4822 124 11553	E-Cap. 6800μF 63V M	*EA000580R
			Connector	
CP302		4822 117 12127	Assy Posistor 2P 180mm	*HP000030R
			Diode	
D301		4822 130 30621	1N4148	QP13030621
D302		4822 130 70046	UZ9.1BSC Diode Zener	*HD301100R
D303		4822 130 30621	1N4148	QP13030621
D304		4822 130 30621	1N4148	QP13030621
D305L/R		4822 130 70048	UZ27.0BSC Diode Zener	*HD301120R
D306L/R		4822 130 30621	1N4148	QP13030621
D307L/R		4822 130 30621	1N4148	QP13030621
D308L/R		4822 130 30621	1N4148	QP13030621
D309		4822 130 81737	UZ5.1BSB Diode Zener	*HD301080R
D310		4822 130 30621	1N4148	QP13030621
D313				
|		4822 130 30621	1N4148	QP13030621
D318				
D319				
|		4822 130 33765	1N6A03/1N5402	QP13033765
D322				
			IC	
IC301		4822 209 72748	LC7821	HC10228030
IC302		4822 209 91029	KIA4559 OP-Amp.	*HC103590R
IC303		4822 209 32995	TDA7313	QP20932995
IC304		4822 209 91029	KIA4559 OP-Amp.	*HC103590R
IC305		4822 209 90742	NJM2177A	*HC103610R
IC306		4822 209 32694	NJU9701	HC10127090
IC307		4822 209 91029	KIA4559 OP-Amp.	*HC103590R
IC308		4822 209 83785	TC9176P	HC10118050
IC309		4822 209 91029	KIA4559 OP-Amp.	*HC103590R
			Coil	
L301L/R		4822 157 71892	Coil 0.5μH	*LC106490R
L302		4822 157 71892	Coil 0.5μH	*LC106490R
L303		4822 157 71892	Coil 0.5μH	*LC106490R
			Transistor	
Q301		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q302		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q303L/R		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q304L/R		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q306		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q307		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q308		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q309		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q310		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q311		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q312		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q313L/R		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q314L/R		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q315L/R		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q316L/R		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
Q317L/R		4822 130 43012	KTA1024/2SA1208R-S	HT112082A0
Q318L/R		4822 130 43225	KTC3206/2SC2229	HT322292A0
Q320L/R		4822 130 63898	KSC2690A-Y	*HT300400R
Q321L/R		4822 130 63897	KSA1220A-Y	*HT100230R
Q324L/R		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q325		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q326		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q327		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q328		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q329		4822 130 43012	KTA1024/2SA1208R-S	HT112082A0
Q330		4822 130 43225	KTC3206/2SC2229	HT322292A0
Q332		4822 130 63898	KSC2690A-Y	*HT300400R
Q333		4822 130 63897	KSA1220A-Y	*HT100230R
Q336		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q337		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q338		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q339		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q340		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q341		4822 130 43012	KTA1024/2SA1208R-S	HT112082A0
Q342		4822 130 43225	KTC3206/2SC2229	HT322292A0
Q344		4822 130 63898	KSC2690A-Y	*HT300400R
Q345		4822 130 63897	KSA1220A-Y	*HT100230R
Q348		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q349		4822 130 42715	KTA1266Y/KTA1015Y/2SA933	HT10001000
Q350		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q351		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q503L/R		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q504		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q505		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
			Resistor	
R345L/R		NSP	Metal Film 2.2kΩ 1W J	NK05222010
R357L/R		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R358L/R		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R365L/R		4822 117 11462	Metal Film 4.7Ω 1W J	NK05047010
R382		4822 116 60299	Metal Film 100Ω 1W J	NK05101010
R394		4822 117 11859	Metal Film 2.2kΩ 2W J	NK05222020
R451		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R452		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R459	U		Metal Film 15Ω 1W J	*NK000150R
R459	/02B	4822 117 10819	Metal Film 15Ω 2W J	NK05150020
R476		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R477		4822 111 92141	Cement 0.27Ω 5W J	*GO000010R
R484	U		Metal Film 15Ω 1W J	*NK000150R
R484	/02B	NSP	Metal Film 10Ω 1W J	NK05100010
			Miscellaneous	
30		4822 290 81739	Terminal Speaker 8P	*YT000790R
31		4822 290 81737	Terminal Speaker 6P	*YT000800R
32		4822 265 20743	Jack RCA 1P	*YT000890R
33		4822 265 20742	Jack RCA 2P	*YT000880R
34		4822 267 41251	Jack RCA 6P	*YT000840R
35		4822 265 20741	Jack RCA 4P	*YT000860R
X301		4822 242 81969	Resonator CSA2.0MG-TF01	*FQ000270R

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POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			P.C.B Tuner Part	
			Capacitor	
TC101		4822 125 60227	Trim.-Cap. 20pF 50V J	*CT000080R
TC102		4822 125 60228	Trim.-Cap. 10pF 50V K	*CT000090R
			Filter	
CF101	U		Filter SFE10.7MA8-A-TF21	*FF100200R
CF102	U		Filter SFE10.7MA8-A-TF21	*FF100200R
CF101	/02B	4822 242 82235	Filter SFE10.7MS3G	*FF100210R
CF102	/02B	4822 242 82235	Filter SFE10.7MS3G	*FF100210R
CF103		4822 242 73951	Filter SFZ450B	FF10045200
CF104		4822 242 82242	Filter BFU450C4N	*FF100190R
			Diode	
D101				
I		4822 130 30621	1N4148	QP13030621
D105				
D106		4822 130 70044	UZ5.1BSB Diode Zener	*HD301080R
D107		4822 130 81737	UZ5.1BSB Diode Zener	*HD301080R
D109		4822 130 30621	1N4148	QP13030621
VD101		4822 130 81197	KV1236Z VARICAP	*HD400120R
VD102		4822 130 81197	KV1236Z VARICAP	*HD400120R
			IC	
IC101		4822 209 71785	LA1266G	HC10222030
IC102		4822 209 91051	HA12016	*HC103600R
IC103		4822 209 30152	LM7001	*HC101040R
IC104		4822 209 83067	GD4066B	HC406600B0
			Coil	
L101		4822 157 71881	Coil AM-ANT	*TC000150R
L102		4822 157 71888	Coil AM-OSC	*TC000160R
L103		4822 146 31508	Coil FM-DET-A	*TC000180R
L104		4822 157 71895	Coil FM-DET-B	*TC000190R
L105	/02B	4822 157 71893	Coil 20.8mH	*LC106500R
L106		4822 157 71896	Coil AM IFT	*TC000200R
L107L/R		4822 157 71894	Coil MPX 19KHz FB-7SG	*TC000170R
			Transistor	
Q101		4822 130 62294	KTC3194Y/KTC1923Y/2SC1809	HT318091P0
Q102		4822 130 41312	KTC2240BL/KTC3200/2SC2240	HT322402A1
Q103		4822 130 63908	2SK-168DTZ FET	*HF200180R
Q104				
I		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q106				
Q108		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q109L/R		4822 130 63904	KTD1302S/2SD1302	HT413021A0
Q110		4822 130 42715	KTA1266Y/KTA1015Y/2SA933	HT10001000
Q111		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q112		4822 130 42715	KTA1266Y/KTA1015Y/2SA933	HT10001000
Q113		4822 130 43546	2SK117Y FET	HF201172B0
Q114		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
			Resistor	
R115		4822 116 60299	Metal Film 100Ω 1W J	NK05101010
R139		NSP	Metal Film 330Ω 1W J	NK05331010
R162		4822 116 83543	Metal Film 150Ω 1W J	NK05151010
R177		NSP	Metal Film 330Ω 1W J	NK05331010

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
VR101		4822 100 11351	Trim-Res. 10k(B)	RA01030780
VR102		4822 100 12294	Trim-Res. 50k(B)	*RA000670R
VR103	U		Trim-Res. 220k(B)	RA02240760
VR103	/02B	4822 100 12295	Trim-Res. 500k(B)	*RA000680R
VR104		4822 101 30707	Trim-Res. 2k(B)	RA02220760
			Miscellaneous	
36		4822 267 31993	Jack Remote 2P	*YT000850R
37		4822 267 41253	Jack RCA 3P	*YT000900R
38	U		Terminal Antenna 4P	*YT000810R
38	/02B	4822 290 81738	Terminal Antenna 4P	*YT000820R
FE101	U		FTH3-505H 3GANG	*AW000070R
FE101	/02B	4822 210 10676	FE407-G60	*AW000080R
X101		4822 242 82238	Resonator 7.2 MHz	*FQ000280R
			P.C.B Front Part	
			Capacitor	
C204		4822 124 11552	BACK-UP CAP. 0.047μF 5.5V	*EX000020R
			Diode	
D200				
I		4822 130 30621	1N4148	QP13030621
D203				
D204		4822 130 70051	SLR-54URCA49 LED	*HI100690R
D205		4822 130 70051	SLR-54URCF03 LED	*HI100690R
D206		4822 130 70051	SLR-54URCF03 LED	*HI100690R
D207				
I		4822 130 30621	1N4148	QP13030621
D209				
D210		4822 130 70051	SLR-54URCF03 LED	*HI100690R
D211				
I		4822 130 30621	1N4148	QP13030621
D213				
D214		4822 130 83228	UZ15.0BSC Diode Zener	*HD301110R
D215		4822 130 83228	UZ15.0BSC Diode Zener	*HD301110R
D216		4822 130 70043	UZ4.3BSB Diode Zener	*HD301070R
D217		4822 130 70046	UZ9.1BSC Diode Zener	*HD301100R
D218		4822 130 30621	1N4148	QP13030621
D219		5322 130 30684	1N4002 Rectifier	QP13030684
D220		4822 130 70045	UZ5.6BSB Diode Zener	*HD301090R
D221		4822 130 30621	1N4148	QP13030621
			Transistor	
Q200		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q201				
I		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q204				
Q205		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000
Q206		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q207		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q208				
I		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q210				
Q211		4822 130 62503	KTC114YS/DTC114YS	*BA000210R
Q212		4822 130 62787	KTA107M/DTA114YS	*BA000190R
Q213		4822 130 62503	KTC114YS/DTC114YS	*BA000210R

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POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			Resistor	
R224		NSP	Metal Film 470Ω 1W J	NK05471010
			Miscellaneous	
SW4 I SW19		4822 276 13661	Switch Tact	*SP000610R
17		4822 276 13659	Switch Encoder	*SR000070R
X200		4822 242 82236	Resonator 4.19MHz	*FQ000260R
FL101		4822 130 91528	5TM6 FIP	*HQ300180R
RMC201		4822 130 91529	KRN-34LI Remote Sensor	*HW100300R
IC200		4822 209 91036	μPD78044GF	*HU100250R
			P.C.B Power Switch Part	
			Miscellaneous	
SW3		4822 276 13661	Switch Tact	*SP000610R
			P.C.B VCR2 Part	
			Miscellaneous	
14		4822 265 31321	Jack RCA 3P Gold	*YT000870R
			P.C.B Power Supply Part	
			Capacitor	
C601		5322 124 22229	E-Cap. 1000μF 35V M	EA10803510
C602		5322 124 22229	E-Cap. 1000μF 35V M	EA10803510
C608		4822 124 41289	E-Cap. 470μF 25V M	EA47702510
			Diode	
D601 I D611		5322 130 30684	1N4002 Rectifier	QP13030684
			Fuse	
F601	U		Fuse SB 1A 125V	*FS000240R
F602	U		Fuse SB 1A 125V	*FS000240R
F601	/02B	4822 070 31002	Fuse T 1A 250V	*FS000280R
F602	/02B	4822 070 31002	Fuse T 1A 250V	*FS000280R
F603	U		Fuse SB 250 mA 125V	*FS000230R
F603	/02B	4822 070 32502	Fuse T 250 mA 250V	*FS000270R
F604	U		Fuse SB 2.5A 125V	*FS000250R
F604	/02B	4822 253 50167	Fuse TH 2.5A 250V	*FS000300R
F605	U		Fuse SB 6A 125V	*FS000260R
F605	/02B	4822 070 33152	Fuse T 3.15A 250V	*FS000290R
			IC	
IC601		4822 209 91032	KA7915 Regulator	*HC300130R
IC602		4822 209 90536	KA7815 Regulator	HC38915060
IC604		4822 209 91031	KA7806 Regulator	*HC300120R
			Tranasistor	
Q601		4822 130 42298	KTC1815Y/KTC3198/2SC1740	HT30001000

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			Resistor	
R601		4822 117 11462	Metal Film 4.7Ω 1W J	NK05047010
R604		4822 117 11462	Metal Film 4.7Ω 1W J	NK05047010
R606	U		Carbon 3.3MΩ 1/2W J	RC05471010
			Miscellaneous	
26	U		AC Outlet 2P	*YT000910R
26	/02B	4822 267 31994	AC Outlet 1P	*YT000920R
RL601		4822 280 80794	SDT-SS-112DM RELAY	*LY000120R
			P.C.B Speaker Selector Part	
			Miscellaneous	
SW1		4822 276 13658	Switch Push 2/2	*SP000620R
SW2		4822 276 13709	Switch Push 4/2	*SP000630R
			P.C.B Headphone Part	
			Resistor	
R801L/R		4822 116 60494	Metal Film 330Ω 2W J	NK05331020
			Miscellaneous	
5		4822 267 31992	Jack Phone Gold	*YT000830R